

**REMARKS**

Applicants appreciate the consideration shown by the Office as evidenced by the Office Action mailed on October 16, 2003. In that Office Action, the Examiner allowed claims 1-16 and 19-40; and rejected claims 17, 18, and 41-50. The Examiner further objected to the specification. In this application, Applicants have amended the specification and claims 41, 48, and 50, and have cancelled claims 46 and 47. Applicants respectfully request reconsideration of the application by the Examiner in light of the above amendments and the following remarks offered in response to the Office Action.

**1. Claim Rejections 35 USC §112, second paragraph**

Claims 17, 18, and 47 were rejected under 35 USC §112, second paragraph. The Examiner stated that the phrase "parallel to the substrate" is unclear. Applicants respectfully traverse this rejection and respectfully submit that the terms recited in these claims are clear because they are clearly defined in the specification. "When the specification states the meaning that a term in the claim is intended to have, the claim is examined using that meaning...." MPEP 2173.05, *citing In re Zletz*, 893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989). Applicants respectfully direct the Examiner's attention to paragraph [0022] in the specification, where the following definition is given:

The term "substantially parallel" as used herein means that an axis of the gradient direction makes an angle with the substrate-layer interface of less than about 45 degrees.

Similarly, the phrase "perpendicular to the substrate" recited in claim 18, is defined in the same paragraph of the specification:

The term "substantially perpendicular" as used herein means that an axis of the gradient direction makes an angle with the substrate-layer interface of greater than about 45 degrees.

Claim 47 has been cancelled and its recited limitations incorporated into independent claims 41 and 50, and claims 17 and 18 remain pending in this application. As the terms recited in each of these claims are clearly defined in the specification, Applicants respectfully submit that claims 17, 18, 41, and 50 comply with 35 USC §112, second paragraph. Favorable reconsideration is respectfully requested.

## 2. Claim Rejections—35 USC §102(b) and §103(a)

Claims 41, 44, 45, and 49 were rejected under 35 USC §102(b) as being anticipated by Singh *et al.* (US 4,894,297, hereinafter "Singh"). Claims 46-48 were rejected under 35 USC §103(a) as being unpatentable over Singh in view of Cable *et al.* (US 5,445,903, hereinafter "Cable"). Singh describes a cylindrical, multilayered fuel cell. The Examiner applies Cable for its discussion of a porosity gradient in an electrode. After careful consideration of the Singh-Cable combination, Applicants respectfully traverse the rejection of claim 47 because the combination, particularly Cable, does not teach, suggest, or disclose a gradient that "exists in a direction substantially parallel" to the substrate, as that phrase is recited in former claim 47 and defined in the present specification.

Cable states, "a porosity gradient may be advantageously established across the electrode and reactive microslip zone." Col. 6, lines 36-37. In referring to Cable's Figure 2, it is clear that a gradient extending across electrode 4,5 and microslip zone 16, 17 could not have an "axis of the gradient direction mak[ing] an angle with the substrate-layer interface of less than about 45 degrees." The gradient direction crosses the interfaces between layers; as the Examiner correctly states, such a gradient from inner to outer layers would define a radial direction in a tubular electrode configuration. As such, the gradient direction of a gradient described by Cable would be perpendicular to the layer interfaces, and this is true whether the substrate is flat or cylindrical. Singh is silent on the matter of a porosity gradient, and so the applied combination does not teach, suggest, or disclose "at least one gradient in at least one parameter selected from the group consisting of composition and porosity...wherein said at least one gradient of said at least one layer exists in a direction substantially parallel to said substrate" as recited in cancelled claim 47.

The recitation of cancelled claim 47 noted above has been incorporated into independent claims 41 and 50. Applicants respectfully submit that the incorporation of this limitation as to a gradient renders claims 41 and 50 patentably distinct from not only the Singh-Cable combination but also from the other references applied to these specific claims in the Office Action. For example, as claim 41 was rejected under Singh alone, there is no teaching, suggestion, or disclosure of the gradient limitation. Similarly, the combination of Singh with Chaio (US 5,935,727) fails to teach suggest, or disclose the gradient limitation. Applicants respectfully submit that claims 41 and 50 are allowable over the references cited

by the Examiner, and further that claims 42-46 and 48-49, which depend from claim 41, are allowable because each depends from an allowable independent claim.

### **3. Objections to the Specification**

Applicants have amended the specification to address the Examiner's objections. The Figure 1 element 100 was added to paragraph [0012]. In paragraph [0013], Figure 2 element 212 was deleted and replaced by 210. 210 now represents the "array of ETP sources." Applicants respectfully submit that these amendments fully address the concerns of the Examiner, and request favorable reconsideration.

### **4. Allowed Claims**

Applicants note with appreciation the allowance of claims 1-16 and 19-40. Applicants have stated above their reasons for believing that claims 17 and 18 are allowable in their original form.

### **5. Conclusion**

In light of the above amendments and the remarks presented herein, Applicants submit that the case is in condition for immediate allowance and respectfully request such action. If, however, any issues remain unresolved, the Examiner is invited to telephone the undersigned at the number provided below.

Respectfully submitted,

  
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